

REMARKS

Claims 1-26 and 28-37 are pending herein. Claims 38-44 have been canceled herein, as being drawn to non-elected subject matter.

1. An information disclosure statement is filed herewith, citing the references identified in the International Search Report of the corresponding PCT application. Enclosed with the information disclosure statement is a copy of the Written Opinion transmitted with the International Search Report. It is noted that the Written Opinion and Search Report cite references relied upon below by the PTO, and that the Written Opinion and Search Report indicate the references as category "A" belonging to merely background subject matter, and further indicate that the present claims meet PCT Article 33(2)-(3) as the prior art does not teach or fairly suggest the claimed invention. As discussed in more detail below, Applicants agree with the positions taken in the International Search Report and the Written Opinion.

2. The minor amendment to claim 20 and the cancellation of claim 27 attends to the claim objections raised in the Office Action. Accordingly, withdrawal of the objections is respectfully requested.

3. Claim 5 was rejected under §112, second paragraph. The subject matter of claim 5 has been incorporated into claim 1, and clarified to recite that the indicia are spaced apart along a length of the substrate "at a constant pitch." In this regard, please refer to paragraph 27 of the present specification, explaining this feature in more detail. Essentially, claim 1 now recites that the indicia are spaced apart from each other by fixed distance. Such as with any range of 0.5 to 100 m, as now recited in claim 5. In view of the amendments to the present claims, withdrawal of the §112, second paragraph rejection is respectfully requested.

4. Claims 1-4, 7-8, 10-13 and 18-38 were rejected under §103 over Norton et al. in view of Fasano et al. This rejection is respectfully traversed for the following reasons.

The claimed invention (claim 1) is drawn to a superconducting article, which is typically in the form of a superconducting tape having an extended length, such as an aspect ratio of not less than 10^3 or 10^4 (claims 3 and 4, respectively). During manufacture, long-length

superconducting articles are typically handled by reel-to-reel processes, in which the article is subjected to various processing operations, such as deposition of constituent layers, by translation from a feed reel to a take-up reel. In contrast to typical microelectronic fabrication processes, it is a goal within the superconductors industry to provide large, extended length superconductors. In this regard, commercially viable superconducting articles may have extended lengths such as on the order of 1 km or even greater. In contrast, typically microelectronic fabrication seeks miniaturized electronic components for improved packaging and superior material utilization. As described throughout the present specification, the claimed invention calls for a superconducting article having a substrate including a plurality of indicia spaced apart along a length of the substrate. The indicia provide numerous advantages and functionality within the context of long-length superconductors. For example, the indicia enable correlation of product quality to position and tracking of position for the purpose of product traceability. In addition, the indicia may provide a feedback mechanism that may be utilized for active control of rotating reels used in product manufacturing, characterization, testing and packaging. See paragraph 26 of the present specification. Claim 1 has been amended herein to clarify that the indicia are spaced apart from each other at a constant pitch, further enabling repeatable and accurate measurement of product quality at highly precise positions along the length of the tape, such as after deposition processes to form the various layers of the superconducting article. See paragraph 27 of the present specification. Incorporation of indicia in the context of a superconducting article may provide even additional functionality and benefits, such as enabling the provision of conductor information to end users, including customers, such as commercial integrators. See paragraph 33 of the present specification.

Claim 14 has been rewritten to be in independent form, and recites a superconducting article in which the indicia are comprised of indicia sets each including a unique position identifier. Use of unique position identifiers provides even additional functionality, including highly precise position identification along extended lengths, which positions may be correlated to manufacturing or processing conditions or segment performance, such as superconductive properties at particular locations.

Turning to the cited prior art, the primary reference Norton et al. represents a state of the art superconducting tape structure. Applicants note that the primary reference is co-owned by

the present assignee, and that Applicants are familiar with the disclosure of this reference. The PTO has merely relied upon the disclosure of Norton et al. for basic structural features of a superconducting tape, and has relied upon the secondary reference Fasano et al. for alleged teaching of incorporation of indicia.

Fasano et al. teach two primary concepts. First, Fasano et al. teach the incorporation of an unique optical identifier within the metalized paste forming a conductor layer within a microelectronic device. The material utilized is an optical dye that may be identifiable under UV light. The intent behind the incorporation of the dye is for verification, to insure that a particular composition has been used during manufacture. Fasano et al. further teach that a substrate identifier 15 (see FIG. 1) may be used in combination with the optical dye for identification of the substrate. The identifier may be a bar code, serial number, etc.

Applicants respectfully submit that teaching of an optical dye within a metalized paste, and teaching of a unique identifier on a substrate in the form of a bar code or serial number fails to teach or even remotely suggest incorporation of a plurality of indicia spaced apart along the length of a superconducting article at a constant pitch according to claim 1. In this regard, incorporation of a dye is of limited significance in the context of the claimed invention and use of a substrate identifier in the form of a bar code or serial number merely represents the state of the art over which the claimed invention has been developed. At best, Fasano et al. suggests incorporation of a UV dye within one of the conductive layers of the claimed superconducting article and/or incorporation of a bar code or serial number on the superconducting article. There is no teaching or suggestion of a plurality of indicia spaced apart as recited, let alone the attendant advantages in the context of a superconducting article as detailed above.

For at least the foregoing reasons, Applicants respectfully submit that the presently claimed invention would not have been obvious over Norton et al. in view of Fasano et al. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

5. Claims 1-8, 10, 12, 14-17, and 20-38 were rejected under §103 over Norton et al. in view of Rumsey et al. This rejection is respectfully traversed for the following reasons.

A background discussion of the presently claimed invention and of the primary reference Norton et al. is provided above. Apparently, the PTO has looked to Rumsey et al. for alleged suggestion of incorporation of indicia along the superconducting article of Norton et al. In short, Rumsey et al. teach an intermediate structure for fabrication of microelectronic devices, having a plurality of ball grid arrays (BGAs) 62 provided along BGA substrate 50. Each ball grid array 62 has an associated alignment fiducial 54. Each fiducial is provided for precise dicing of the substrate to provide individual ball grid arrays, which are then mated to an associated active semiconductor device (e.g., microprocessor, microcontroller, memory device, etc.). That is, the purpose of each fiducial is for mechanical handling and dicing of the substrate with adequate precision.

Applicants respectfully submit that it would not have been obvious to incorporate a plurality of alignment fiducials in the context of Norton et al. As described above, the fiducials of Rumsey et al. are provided with a dedicated ball grid array, and the fiducial is incorporated for precise dicing operations. However, the structure of Norton et al. does not have any repeated units that are intended to be diced, and/or handled in any unique manner. Rather, as is typical in the context of superconducting tapes, the entire tape is a uniform structure. As described above, the superconductor industry is faced with precisely the opposite problem associated with conventional microelectronic fabrication, formation of relatively large, long-length superconductors, not discrete microelectronic devices. Incorporation of fiducials based upon the combined teachings of Norton et al. and Rumsey et al. is not even remotely suggested. *Absent benefit of applicants' own disclosure*, the fiducials according to the teachings of the references would provide no attendant advantages or functionality, let alone the stated functionality according to Rumsey et al. (for dicing operations). Still further, the attendant advantages provided by the claimed invention as described above are nowhere disclosed or even remotely suggested. There is no teaching or suggestion of associating superconductor position with processing conditions and/or characterization. In addition, independent claim 14 recites even further patentably distinct subject matter, as the references do not disclose or even remotely suggest unique position identifiers spaced apart along the length of a superconducting article.

For at least the foregoing reasons, Applicants respectfully submit that the presently claimed invention would not have been obvious over Norton et al. in view of Rumsey et al.

Accordingly, reconsideration and withdrawal of the §103 rejection over these references are respectfully requested.

6. Claims 1-7, 9, 15, 16, and 20-38 were rejected under §103 over Norton et al. in view of Dautartas. This rejection is respectfully traversed for the following reasons.

Again, a background discussion of the claimed invention and the primary reference Norton et al. is provided above. Applicants submit that the disclosure of Dautartas is even less relevant than the secondary references discussed above. As shown in FIG. 1 and column 3, first full paragraph of Dautartas, a plurality of silicon substrates are stacked on each other with precision by the use of "alignment fiducials" in the form of pyramidal detents 25 and 27, between which are sandwiched alignment spheres 32 and 34. The alignment of detents and inclusion of spheres serve to provide physical alignment of the stack of substrates to define a precise via through which a communication fiber is routed. Accordingly, it is quite clear that while Dautartas describes "fiducials" those fiducials take on the form of detents and spheres provide for physical alignment of a stack of substrates.

Applicants respectfully submit that there is no teaching or suggestion of incorporation of such detents and spheres in the context of the long-length superconducting tape of Norton et al. In this regard, Norton et al. do not even disclose or suggest a stack of substrates, but rather, a single continuous long-length superconductor containing a substrate. Moreover, Dautartas fails to teach or even remotely suggest indicia spaced apart along a length of the substrate at a constant pitch (claim 1), as well as unique position identifiers (claim 14).

Applicants respectfully submit that the presently claimed invention would not have been obvious over Norton et al. in view of Dautartas. Accordingly, reconsideration and withdrawal of this §103 rejection are respectfully requested.

7. The present claims were also rejected over another primary reference, Robbins, in view of the secondary references discussed above (Fasano et al., Rumsey et al., and Dautartas). Applicants respectfully submit that these rejections are deficient for the reasons advanced above, as Robbins is no more relevant and provides no nexus to the secondary references beyond Norton et al. Accordingly, withdrawal of these §103 rejections is respectfully requested as well.

Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the Applicant would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicants' undersigned representative at the number listed below.

Applicants do not believe that any additional fees are due, but if the Commissioner believes additional fees are due, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

Date

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Jeffrey S. Abel, Reg. No. 36,079

Attorney for Applicant(s)

TOLER, LARSON & ABEL, L.L.P.

5000 Plaza On The Lake, Suite 265

Austin, Texas 78746

(512) 327-5515 (phone) (512) 327-5452 (fax)